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construction 206 of a subset of the product machine that performs the correct transfer of data.
Moreover, the input/output nature of the signals is taken into account, so that a finite automation
with output actions is created.

IN THE CLAIMS

The following is a clean version of the entire set of pending claims. Please amend the
claims as follows:

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1. (Amended) A method for exchanging data messages between a first block having a first
protocol for exchanging messages and a second block having a second protocol for exchanging
messages, the method comprising:

receiving a first representation, representing the first protocol, said first
representation using regular expressions;

receiving a second representation, representing the second protocol, said second
representation using regular expressions;

generating a first finite automaton for said first representation;

generating a second finite automaton for said second representation; and

automatically synthesizing an interface between the first and second protocols
based on the first and second finite automata.

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2. (Amended) The method of claim 1, further comprising:

automatically corresponding data from said first and second protocols.

3. (Amended) The method of claim 2, further comprising:

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automatically translating data between said first protocol and said second protocol, said data in said first protocol having a first sequence, said data in said second protocol having a second sequence that is different from said first sequence.

4. (Amended) The method of claim 2, wherein said generating a first finite automaton comprises:

identifying the initial state of the first protocol;
identifying a first sequence of data according to the first protocol;
constructing derivatives of regular expressions; and
eliminating equivalent expressions.

5. (Amended) The method of claim 4, wherein said identifying a first sequence of data comprises:

collecting data that is transferred during one or more transitions; and
integrating said data with previous transitions.

6. (Amended) The method of claim 5, further comprising:

automatically translating data between said first protocol to said second protocol, said data in said first protocol having a first sequence, said data in said second protocol having a second sequence that is different from said first sequence.

7. (Amended) The method of claim 1, further comprising:

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automatically translating data between said first protocol to said second protocol, said data in said first protocol having a first sequence, said data in said second protocol having a second sequence that is different from said first sequence.

8. (Amended) The method of claim 21, wherein automatically generating a third representation comprises:

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- (a) selecting an interface state representing a first finite automaton state and a second finite automaton state;
 - (b) identifying all outgoing transitions in said selected state;
 - (c) determining a new state for each outgoing transition;
 - (d) repeating steps (a)-(c) for each interface state.

9. (Amended) The method of claim 8, wherein generating a third representation comprises:
identifying said permitted operations as operations that do not result in a data inconsistency.

10. (Amended) The method of claim 8, wherein said eliminating comprises:
identifying non-deterministic transitions for each interface state;
selecting a single outgoing transition for each interface state for each input value based upon priority parameters to generate a deterministic interface between the first and second protocols.

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11. (Amended) The method of claim 1, wherein said generating a first finite automaton comprises:

identifying the initial state of the first protocol;
identifying a first sequence of data according to the first protocol;
constructing derivatives of regular expressions; and
eliminating equivalent expressions.

12. (Amended) A computer based system for exchanging data messages between a first block having a first protocol for exchanging messages and a second block having a second protocol for exchanging messages, the system comprising:

storage device to store data and sequences of operations;
a processor to receive signals from said storage device and to execute said sequences of operations;
a receiving unit to transmit signals to said processor and to receive a first and second representation, representing of the first and second protocols, said first and second representations using regular expressions;
an automata unit to generate a first finite automaton for said first representation and to generate a second finite automaton for said second representation; and
a synthesizing unit to automatically synthesize an interface between the first and second protocols based on the first and second finite automata.

13. (Amended) The system of claim 12, further comprising:

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a corresponding unit to receive signals from said processor and to automatically correspond data from said first and said second protocol.

14. (Amended) The system of claim 13, further comprising:

a translation unit to automatically translate data between said first protocol and said second protocol, said data in said first protocol having a first sequence, said data in said second protocol having a second sequence that is different from said first sequence.

15. (Amended) The system of claim 13, wherein said automata unit comprises:

a first identifying unit to identify the initial state of the first protocol;

a second identifying unit to identify a first sequence of data according to the first protocol;

a derivative unit to construct derivatives of regular expressions; and

an eliminating unit to eliminate equivalent expressions.

16. (Amended) The system of claim 15, wherein said second identifying unit comprises:

a data collection unit to collect data that is transferred as one or more transitions;

and

a data analyzer to integrate said data with previous transitions.

17. (Amended) The system of claim 12, further comprising:

a translation unit to automatically translate data between said first protocol and

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said second protocol, said data in said first protocol having a first sequence, said data in said second protocol having a second sequence that is different from said first sequence.

18. (Amended) The system of claim 12, wherein the product unit comprises:

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a selection unit to select an interface state representing a first finite automaton state and a second finite automaton state;

an identifying unit to identify outgoing transitions in said selected state;

a state unit to determine a new state for each outgoing transition;

19. (Amended) The system of claim 18, wherein the product unit further comprises:

a consistency unit to identify said permitted operations as operations that do not result in a data inconsistency.

20. (Amended) A computer readable medium storing instructions which, when executed by a processing system, cause the system to perform a method for exchanging data messages between a first block having a first protocol for exchanging messages and a second block having a second protocol for exchanging messages, the method comprising:

receiving a first representation of the first protocol;

receiving a second representation of the second protocol;

generating a first finite automaton for said first representation;

generating a second finite automaton for said second representation;

generating a third representation of one or more permitted operations of said first

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and second finite automata; and

automatically eliminating non-determinisms in said third representation.

21. (New) The method of claim 1, further comprising:

automatically generating an interface between said first and second protocols.

22. (New) a method for exchanging data messages between a first block having a first protocol and a second block having a second protocol, the method comprising:

generating a first finite automaton corresponding to the first protocol;

generating a second finite automaton corresponding to the second protocol;

generating a representation of one or more permitted operations of the first and second finite automata; and

automatically eliminating at least one non-determinism in the representation.